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VIABILITY OF THE HEAVY STAY BEHIND FORCE

**A Monograph
by
Major Mark J. Eshelman
Infantry**



**School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas**

First Term AY 92-93

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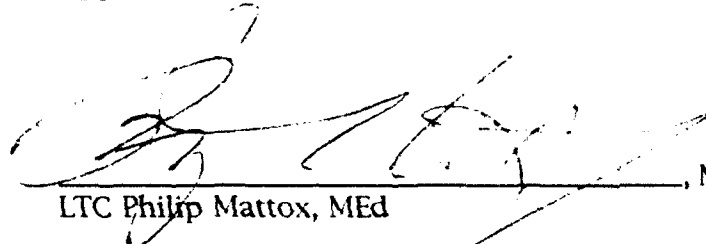
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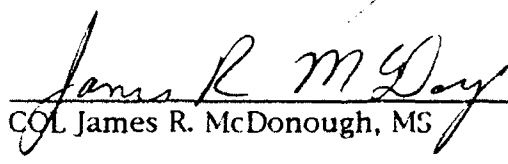
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ABSTRACT

VIABILITY OF THE HEAVY STAY-BEHIND FORCE by Major Mark James Eshelman, USA, 51 pages.

This study examines the viability of heavy (mechanized/armor) stay-behind forces in a deep maneuver role. A stay-behind force is a unit left behind an enemy advance to conduct a mission in the enemy rear after other friendly forces have withdrawn from the area.

The monograph examines possible missions for the deep maneuver stay-behind unit, and the commander's requirements in terms of the seven battlefield operating systems. A determination is made whether the requirements for stay-behind operations can be met, and given the nature of modern battle and the weapons systems available, whether the ends of such operations justify the means.

The conclusion is that the deep maneuver stay-behind operation is not a viable mission for heavy forces. Logistics requirements, fuel and casualty evacuation in particular, are the main limitations. Additionally, with modern technology, deep fires can effectively accomplish the same mission as a deep maneuver force. The monograph concludes that even though stay-behind forces are not viable in the deep battle, they are possible in support of the close fight.

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Section 1

Introduction

The most important thing is to have a flexible approach.... The truth is no one knows exactly what fighting will be like in the future. We can't say anything will stay as it is, but we also can't be sure the future will conform to particular theories, which so often, between the wars, have proved wrong.¹

- Robin Olds

There is a long history of attacking the enemy in his rear area of operations. One of the earliest examples is the story of the Trojan Horse. During the American Civil War, cavalry frequently conducted raids behind enemy lines, and deep maneuver was fairly common during World War II. Deep maneuver is characterized by its high-risk, high-payoff nature. It may force a defender to alter his plan, or even cause temporary paralysis. The latter occurred in 1940 when Guderian's panzer formations slashed deep into France ahead of the main German invasion.² When successful, deep maneuver may have an impact beyond the actual military threat it poses.

There are several ways to get a unit into the enemy rear. It can infiltrate, penetrate enemy front line defenses, move around a flank, or be dropped from the air. It is also possible, as the enemy advances, to leave a force in position after the remainder of the unit withdraws; this is the stay-behind force. There are several categories of stay-behind operations. They can be defensively or offensively oriented, and they can be conducted by heavy or light units.

The viability of the heavy stay-behind force in a deep maneuver

role is the topic of this paper. The research question is: are heavy (mechanized/armor) stay-behind forces a viable means to attack enemy targets throughout the depth of the battlefield? While it would be interesting to study all types of stay-behind forces, space limitations require that the paper be more focused. The viability of light infantry stay-behind forces has already been established. Similarly, historic examples confirm the viability of stay-behind, or strongpoint defenses.

Scope and Key Definitions

The defensive use of the stay-behind force is best seen in a strongpoint defense. Missions include the retention of key terrain, holding the shoulder of a penetration, and conducting local attacks from the perimeter. During WWII at Tobruk in Libya, the Allies established a strongpoint stay-behind force, employing a mobile armor unit to harass enemy lines of communication (LOCs) outside the perimeter.³ At Kholm in 1942, the Germans used a stay-behind pocket to receive a counterattack designed to destroy the advancing Russians.⁴ Defensive stay-behind forces have one common characteristic; they have surrendered their freedom of maneuver.

Offensive stay-behind forces are elements intentionally left behind enemy lines to maneuver in the enemy rear. Offensive stay-behind missions include: disrupt enemy operations by attacking rear echelon forces and installations; inflict casualties with raids and ambushes; supply human intelligence; force the allocation of combat forces to the rear; and control deep fires.⁵ Offensive stay-behind operations may be conducted by large or small, heavy or light units.

The viability of the light infantry stay-behind force has been

studied in depth. Field Manual (FM) 7-20, The Infantry Battalion, and FM 7-72, The Light Infantry Battalion, include sections on the topic. However, there is disagreement about using heavy stay-behind forces in a deep maneuver role. Infantry manuals make no mention of heavy stay-behind operations. Similarly, some writers believe that stay-behind operations are a viable way to get light forces into the enemy rear, but believe a penetration is necessary for heavy forces.⁶

Theorists, such as Major James C. Barbara and Lieutenant Colonel (now Brigadier General) L. D. Holder, believe heavy stay-behind forces can maneuver in the deep battle. Barbara believes heavy forces should be positioned in hide positions in front of the forward edge of the battle area (FEBA). Positions would be located in heavily wooded terrain, away from likely enemy avenues of approach. After withdrawal of friendly forces, stay-behind units would be bypassed and begin a deep thrust in the enemy rear. Major Barbara recommends using a brigade size force for such operations.⁷ Holder also theorizes that armored forces can fight in the enemy rear by striking from bypassed hide positions.⁸

There are, however, reasons why heavy stay-behind operations may be impractical. Sustaining a modern heavy unit requires a tremendous effort, and the force may move beyond fire support range. Still, if stay-behind operations are viable, then it is important to take advantage of the high-payoff obtained by attacking soft targets in the enemy rear where he has little capability to interfere. It is particularly important with respect to the increasingly nonlinear battlefield.

The current trend toward nonlinear battle may increase the chances to employ forces behind enemy lines. The vast spaces of the Russian steppe offer a precedent. Low force densities on the eastern

front during WWII gave the Germans and Soviets many opportunities to deploy up to corps size formations in the enemy rear.⁹ Increased battlefield dispersion today means gaps between units will open more often, making it easier to get stay-behind forces behind enemy lines. Therefore, while the heavy stay-behind force may seem to be a good idea, there is doubt about its viability and reason to resolve the problem.

The monograph's hypothesis is that heavy stay-behind operations are not viable. Problems of sustaining the modern heavy force seem to make independent operations, without assistance, a thing of the past. Additionally, modern technology means we can detect and destroy enemy targets deep, accomplishing the same mission without risking friendly lives behind enemy lines.

To prove the hypothesis, this monograph will examine the stay-behind commander's mission and what his requirements are in terms of the seven battlefield operating systems. The paper will assess whether the requirements for stay-behind forces can be met, and if so, whether the ends of such operations justify the means given the nature of the modern battlefield and the weapons systems available.

A contributing factor to development of the hypothesis was a lack of historic examples. The author found no examples of heavy stay-behind forces in a maneuver role. Analysis of this type stay-behind force has two aspects. The first aspect relates to the unit's establishment in the enemy rear, and includes those things unique to stay-behind operations. It is in this area that there are no examples. The other aspect concerns those things common to all deep maneuver operations. The reader must keep these two aspects of stay-behind operations in mind because the study will rely on examples of deep maneuver to

support many of its assertions. To assist in understanding deep maneuver stay-behind forces, the following definitions are provided:

1) Stay-Behind Force: JCS Pub 1-02 defines a stay-behind force as: "a force which is left in position to conduct a specified mission when the remainder of the force withdraws or retires from the area."¹⁰

2) Bypassed Force: U.S. doctrine does not define a bypassed force. This monograph will use the following definition: a force which finds itself behind an enemy advance after the enemy has maneuvered around it, so the attacking force can maintain its momentum.

3) Deep Maneuver Force: U.S. doctrine does not define a deep maneuver force. This monograph will use the following definition: a maneuver force not operating as a part of the close in battle, or in the immediate vicinity of other friendly units. The deep maneuver force operates in support of the deep battle by attacking enemy forces and installations throughout the depth of the battlefield.

Section II

Missions and Tasks of the Stay-Behind Force

Mission is the first aspect of the stay-behind force to be examined. There are two fundamentally different purposes. First, forces can be left behind to attack command and control (C2), combat support (CS), and combat service support (CSS) sites in the enemy rear

as part of a larger plan. Second, formations can operate in the opponent's rear to tie down enemy forces and prevent their employment elsewhere. In the latter case, the force is not required to make contact and fight the enemy to accomplish its mission. To attack targets in the enemy rear, it is required to physically engage them.

There are many instances of attacking the enemy rear area to tie down forces and keep them from being used in other sectors. An example of a deep maneuver force that consistently accomplished this mission is Colonel John Mosby's cavalry during the American Civil War. In his book Warfare in the Enemy's Rear, Otto Heilbrunn states, "Col. Mosby hardly ever took more than a few hundred men on his raids, and yet neutralized 50,000 of the enemy. The maintenance of large forces in the rear creates a manpower and supply problem which does not exist with small parties."¹¹ However, Mosby seems to be the exception rather than the rule.

A stay-behind force with the mission to tie down enemy combat power, resulting in favorable force ratios in other sectors, is usually unsuccessful. An example occurred from November to December 1944 when the Germans left a stay-behind force at Metz, France. While it successfully tied down an extra American division, that unit would not have been decisive elsewhere in the theater.¹² This was the German experience in other battles as well. During debriefings after the war, German commanders concluded, "the maneuver of deliberately allowing ones forces to be encircled by the enemy so as to tie up his troops in sufficient numbers to even the odds, rarely achieves the desired results."¹³ Army doctrine (FM 71-100, Division Operations) also recognizes the futility of using a stay-behind force to tie down enemy

forces, stating they, "... rarely achieve the desired results."¹⁴

The overwhelming weight of historical and doctrinal evidence points to the futility of attempting to employ forces in the enemy rear merely to tie down a portion of his strength. This type mission is not viable for the heavy stay-behind force, and will not be further addressed in this study. The remaining portion of the monograph will focus on the second type of deep stay-behind unit, that which attacks enemy targets to delay, disrupt, or destroy them as part of a larger plan.

This stay-behind force would be left behind to attack C², CS, or CSS sites in the enemy rear. The mission of the force would be to raise havoc behind enemy lines, similar to what the 4th Armored Division (AD) accomplished at Nancy in the fall of 1944. That unit,

....scattered German reserves, overran depots, and severed lines of communications while incurring a minimum of friendly casualties. The machine guns on CCA's [Combat Command A's] rampaging tanks did as much to pry the Germans out of Nancy as did a frontal attack mounted by an entire infantry division and supported by corps artillery.¹⁵

While the 4th AD's attack was not a stay-behind operation, this passage describing the division's achievements captures the desired effect. It is the requirements for this type of deep maneuver operation, executed by a stay-behind force, that the following section will examine.

Section III

Battlefield Operating System Requirements (BOS)

The seven battlefield operating systems are: maneuver; intelligence; fire support; command and control; mobility,

countermobility, and survivability; air defense; and sustainment. The maneuver BOS will be examined first. Specific areas of interest include the organization of the force, how it will be established in the enemy rear, surprise and deception, and security of the unit.

Maneuver

In order to get the maximum amount of mobile firepower into the enemy's rear, the composition of the stay-behind force will usually be tank heavy. In their aforementioned articles, both Holder and Barbara concur on this point, going on to say they could be either battalion or brigade size.¹⁶ Still, the operation will require a combined arms force. The stay-behind force will require mechanized infantry when operating in close terrain, engineers to reduce obstacles, and air defense to protect from enemy air attack. The importance of employing a combined arms force in the deep attack will become even more evident in the following subsections dealing with the additional battlefield operating systems.

Aside from organization, the form of establishment, or how the stay-behind force maneuvers into the enemy rear is important. FM 7-20 discusses two types of establishment, stating that stay-behind operations can be either planned or unplanned.¹⁷ Unplanned establishment will take advantage of the tactical situation as it develops. A unit would conduct stay-behind operations when it finds itself bypassed, or when bypass is imminent.

Because of the short time involved, unplanned operations will not normally be able to operate out of hide positions. Hide positions require terrain with thick cover and concealment, terrain that is not normally

considered favorable for heavy forces. As a result, it is unlikely armored units will find themselves operating in close terrain, conducive to the use of hide positions, when the opportunity arises to execute an unplanned stay-behind operation.

In an unplanned establishment, the stay-behind force would continue to fight from defensive positions as the enemy advances and other friendly forces withdraw. FM 7-72 states that this technique is the least desirable since the enemy will be able to use his knowledge of the situation to suppress, isolate, and attempt to overrun the unit. The technique is only feasible if the formation has the combat power and protection to withstand repeated enemy assaults.¹⁸ Because this analysis anticipates a series of enemy attacks on the stay-behind force, an unplanned establishment would be best suited for a strongpoint defense. It would be less suited for a stay-behind force in a deep maneuver role. Still, an unplanned establishment could work for a unit remaining in place temporarily, then breaking through disorganized resistance before the enemy can consolidate his encirclement.

If a breakout attack is used, it must take place as soon after establishment as possible. The enemy may not realize he has encircled the unit. The longer the commander postpones the attack, the more organized the enemy forces are likely to become.¹⁹ The German experience on the eastern front in WWII supports this idea. During interviews after the war, German officers concluded that, "few tactical preparations will be necessary if a command faced with encirclement can exploit the opportune moment by breaking out as soon as the enemy's intentions have been recognized."²⁰ There is an element of surprise that gives the unplanned stay-behind force an advantage

getting into the enemy rear. As long as the encirclement has not been consolidated or reinforced, a breakthrough has at least some chance of success.

Planned stay-behind operations can be more deliberate. A unit would operate in the enemy rear for a specified time or until some event occurred. Planned operations would have time to employ a covert form of establishment through the use of hide positions. Good hide positions must be identified in the main battle area (MBA) or the security area. Positions will be in close rugged terrain that is likely to restrict enemy movement, and provides concealment from aerial detection.²¹ Additionally, planned establishment could use deception to achieve surprise.

The use of deception and surprise are vital to the success of the stay-behind force in a deep maneuver role. German experience in WWII led commanders interviewed after the war to conclude that surprise, the combination of secrecy and speed, was the most important factor in deep maneuver. These commanders felt that surprise was of greater importance than considerations of enemy strength, terrain conditions, or the distance to friendly lines.²² Supporting the German beliefs, Holder states that if the formation does not achieve surprise, it will probably fail.²³ With respect to establishing the stay-behind force, surprise achieved through deception is best achieved by utilizing hide positions.

The first requirement is to make the stay-behind force disappear from enemy view. This will require a deception plan to convince the enemy that the stay-behind force is a functioning part of the main battle area (MBA).²⁴ In order to do this, forces will be required to

replicate the unit's communications signature while it goes into hide positions. The unit itself will go into listening silence, using wire or couriers for communication.²⁵

Deception is also important if the stay-behind force is using an unplanned form of establishment, or is breaking out of an encirclement. In such a case, deception may take the form of massing tanks on the side of the encirclement opposite the desired breakout point, then quickly shifting the attack across the perimeter, moving just prior to penetration. Deception might also be achieved by driving one or two tanks around an area to simulate the assembly of a larger force.²⁶ In either case, for both planned and unplanned establishments, surprise, achieved through deception, is of vital importance to the establishment of stay-behind forces in the enemy rear.

Surprise is also important from the perspective of mission objectives and direction of attack. If the enemy knows where the attack is headed, they can mass force to meet and defeat it. During WWII, German commanders found that movement perpendicular to the enemy lines of operation seemed to have the best results in this regard.²⁷ However, regardless of the method, deception is also important to ensure the objective of the deep maneuver force be disguised from the enemy. Therefore, deception as to the ultimate objective must be planned into the operation.

Security of the force is another concern for stay-behind operations, particularly with respect to its deep maneuver role. One principle of protecting an armored force in mobile warfare is to keep it moving. In his book Tank Warfare, Richard Simpkin says,

This ultrahigh mobility vehicle depends largely on indirect protection for its survival; it cannot afford to be hit by a specialized weapon system, so it has to keep moving flat-out whenever it is at risk. Once it stops, it is both literally and figuratively a sitting target.²⁸

Simpkin was writing of armored warfare in general, but the importance of ensuring security for a force isolated in the enemy rear is even more important than for close in operations. A unit operating in the enemy rear is much more self reliant. For example, it does not have the benefit of mutually supporting fires from other units, nor the benefit of a direct connection with the rear logistics base. When the formation loses its freedom of maneuver, the enemy can concentrate forces and firepower to defeat it, or even let the now immobile and largely impotent force wither and die through a lack of resupply.

History supports the conclusion that the security of an armored formation in the enemy rear is dependent on its mobility. Writing about his experiences during WWII, Field Marshall Erich von Manstein wrote: "the security of a tank formation operating in the enemy's rear largely depends on its ability to keep moving. Once it comes to a halt, it will be immediately assailed from all sides by the enemy's reserves."²⁹ There are many examples to support von Manstein's conclusions.

One example is Panzerkampfgruppe (KG) Peiper, operating in the American rear area during the 1944 German Ardennes Offensive.³⁰ After three days, the soldiers of KG Peiper were near exhaustion and the force had lost a significant amount of combat power. KG Peiper went into a twelve hour pause to regroup. During the pause, American forces prepared defenses and destroyed several key bridges the Germans required to continue the attack. With the additional problem of

resupply, these measures resulted in KG Peiper reaching its culminating point, and soon led to its final defeat.³¹ As KG Peiper was encircled, the unit abandoned all heavy equipment, prisoners, and wounded, then attempted an unsuccessful breakout.³² Because of the twelve hour operational pause, the Americans were able to take away the mobility of KG Peiper. Once KG Peiper's freedom of maneuver was lost, it was possible to concentrate the forces to defeat it.

If the deep maneuver force must go into a temporary halt, all around security is vital. This is supported by German experience in WWII as well. After losing several isolated units during offensive operations on the Russian Front, the German Army developed what became known as the "hedgehog defense." When operating in the enemy rear, halted panzer units would form defensive rings called "Hedgehogs" to conduct resupply, or other tasks requiring a temporary stop. The key point of the defense was the provision for all-around security. This was done through a concentric circle of defensive rings. The command post was established in the center and a wide circle of tanks, ready to shoot 360 degrees, was placed in a ring around it. In front of the tanks, infantry were placed in foxholes, hasty ditches, or embankments, in such a way that the tanks could fire over their heads. Security patrols and a ring of outposts formed an outer cordon.³³ While freedom of maneuver was threatened by halting, the "hedgehog defense" was successful in providing temporary protection for isolated maneuver units that were forced to stop. A stay-behind force used in a deep maneuver mission would have to make similar provisions for all-around security during any short halts that are required.

The return to friendly lines will also be a major part of planning

stay-behind operations. Holder believes it might be the most dangerous phase of such operations.³⁴ While not an impossible task, return routes must be planned. The required planning and coordination is an additional effort required by stay-behind missions not normally associated with more conventional large unit operations.

There are two major conclusions concerning the maneuver requirements of the stay-behind force. The first relates to the method of establishment. Surprise, achieved through deception, is of vital importance. However, time constraints posed by a rapidly evolving tactical situation will limit the ability to use surprise and deception during an unplanned establishment. The only surprise the stay-behind force will get is that inherent in the tactical situation, resulting from the enemy being unaware of what is occurring.

The second conclusion concerns security of the formation. The stay-behind unit must remain on the move. On departing its hide positions, the heavy stay-behind force will be vulnerable to massed enemy fires when it stops. When the force does go into a temporary halt, all-around security is of primary importance. In the final analysis, the maneuver requirements of the stay-behind commander can be accomplished without an unreasonable amount of effort.

Intelligence and Electronic Warfare

Intelligence about the enemy situation will be particularly important to the stay-behind force during its establishment in the enemy rear. As the enemy bypasses the force, a clear picture of the situation will be of utmost importance. FM 100-15 states: "early in the encirclement there will be gaps or weaknesses in the encircling force.

Reconnaissance will reveal them and the attack should capitalize on them."³⁵ Intelligence will also be important after the unit moves out of the hide position, into the attack.

FM 100-15 states the commander operating in the enemy rear must continue to employ his intelligence collection assets to accomplish his mission, and to provide vital intelligence about the enemy rear to his higher headquarters.³⁶ History demonstrates the importance of reconnaissance to identify enemy weaknesses. An example is KG Peiper's use of reconnaissance to find routes to key objectives, even taking civilian prisoners for guides.³⁷ Since the stay-behind force is likely to be outnumbered, the advantage of having a clear picture of the situation is perhaps even more important than in other operations.

To meet his intelligence requirements, the stay-behind force commander must make maximum use of his scouts and other organic reconnaissance elements. Additionally, since his operations will be taking place as a part of his parent headquarters deep battle, he should expect to get tactical intelligence from it as well. In fact, since the mission is high-risk, it is probably important enough to constitute a priority effort. In that case, additional intelligence collection assets should be dedicated by higher to support the mission.

Fire Support

Fire support is likely to be a major concern of the stay-behind commander because he will normally have less artillery in the deep maneuver role.³⁸ The reasons relate to resupply and mobility. The deep maneuver force should not take weapons that cannot be fully manned, or adequately sustained. In the past, formations deep behind enemy

lines failed when artillery had no external resupply.³⁹ Additionally, artillery is not as mobile as tanks.⁴⁰ Therefore, stay-behind units should not take heavy guns that may be a hinderance in rough terrain.

Experience has shown that armor and infantry have a tendency to outdistance artillery unless it is kept with the maneuver force. This was learned by the Allies in North Africa in 1942 and by units at the National Training Center (NTC). The Center for Army Lessons Learned (CALL) recommends that artillery move within two to three kilometers of the lead unit.⁴¹ Successful units have moved in the general shape of a large box, with the artillery in the middle, and with infantry and armor in the lead and protecting the flanks. However, even protecting the artillery in this manner slows the formation, degrading its survivability.

Because of the limitations on artillery, tactical air support (TACAIR) is more important in deep maneuver than in the close fight. German experience during WWII showed that TACAIR is of particular significance when there is a shortage of artillery ammunition, and an increased need for concealment, "at such a time, close air support aviation may have to assume the role and perform the mission of the artillery."⁴² With respect to fire support, the commander's stay-behind requirements can be met, but by relying more on tactical air support than on artillery.

Command and Control

There are two unique aspects of commanding and controlling stay-behind forces required to operate deep in the enemy rear. The first relates to the need to communicate over extended distances, and the

second to the leadership and discipline of the units taking part in the operations.

For stay-behind operations deep in the enemy rear, current U.S. Army communications equipment is inadequate. The AN/VRC-12 series of radios, the standard radios used by U.S. Army heavy units, is being replaced with the Single Channel Ground and Airborne Radio (SINCGARS). SINCGARS has a short and long range version with a range of eight to thirty-five kilometers.⁴³ The need for security through mobility means that tactical operation centers must remain on the move. They will be unable to stop and set up antennas to extend the range of their radios. Similarly, security requirements will negate the use of static retransmission sites behind enemy lines. As a result, units operating deeper than about thirty-five kilometers will have to be augmented with additional communications equipment to stay in contact with the main force.

The Gulf War demonstrated the requirement for long-range satellite communications at levels below division because of extended operations. Units made extensive use of multichannel satellite, single-channel satellite, and single-channel high frequency (HF) communications equipment not authorized on their tables of organization and equipment (TO&Es).⁴⁴ While these systems can be issued to the deep maneuver force, it will require additional resources, planning, and time to execute.

The second unique aspect of commanding a deep maneuver force relates to leadership. In his study, Fighting Encircled: A Study in U.S. Army Leadership, LTC David Campbell concludes that strong leadership often determines whether the deep maneuver force will be

successful.⁴⁵ German commanders arrived at the same conclusion while conducting stay-behind operations in Russia during WWII. During interviews after the war, German commanders stated that the highest standards of discipline were more important in operations behind enemy lines than in any other situation.⁴⁶ Standards must be upheld by the officers and noncommissioned officers of the unit, but the role of the force commander is particularly important.

The commander is likely to be the most important factor in the success of the unit. Of their experiences in Russia, German commanders wrote, "more than ever, the place of the commander, under such circumstances, is in the midst of his troops; their minds will register his every action with the sensitivity of a seismograph."⁴⁷ Campbell agrees, "it is important to note that troop morale although effected by several variables usually [sic] directly corresponds to the spirit demonstrated by the commander."⁴⁸ In the face of such evidence, it is apparent that the stay-behind mission should be given to an exceptional leader, who has the confidence of his soldiers.

As a result of the unique pressures of fighting behind enemy lines, the best disciplined units available, with the best leaders should be employed. FM 71-100 states, "the deliberate creation of a pocket and insistence of its continued defense can only be justified if the surrounded force consists of experienced and well-disciplined troops who are able to cope with the unusual difficulties involved in this kind of fighting."⁴⁹ With respect to command and control, the stay-behind mission can be accomplished. However, it will require more planning, coordination and resources than other missions in the close battle.

Mobility, Countermobility, Survivability

Mobility is the most important engineering priority for stay-behind forces with a maneuver mission in the enemy rear. As discussed, freedom of maneuver and the ability to stay on the move are the key to security of the unit after departure from hide positions. KG Peiper, without a bridging capability, was halted and finally destroyed after four bridges were blown in its path over the Salm river at Trois Parts.⁵⁰ It is imperative that the stay-behind force take engineering assets to ensure mobility through whatever terrain the operation will take place. At the same time, because Armored Vehicle Launched Bridges (AVLBs) are not as mobile as the maneuver forces, the overall speed of the force may suffer as a result.

A possible alternative to taking engineer vehicles to increase mobility is to use special operations forces to secure key bridges or choke points in advance of the maneuver force. During the Battle of the Bulge, German commandos led by Otto Skorzeny were utilized in this role for KG Peiper. Disguised as American MPs, they were required to move ahead of the column and secure the aforementioned bridges.⁵¹ However, this operation also highlights the uncertainty of relying on special operations. Most of Skorzeny's men did an unconvincing job impersonating Americans and were captured.⁵² While an alternative to securing mobility for the deep maneuver force, special operations are difficult to execute, and success is not certain.

There are other considerations for the use of special operations forces to ensure mobility in the deep fight as well. Special operations require extensive planning time and rehearsal, so they would be used only with planned stay-behind operations. Additionally, because they

exist in limited numbers and are difficult to replace, special operations units will be used only on the most important missions, probably of operational or strategic significance.

Countermobility may be a another consideration for the heavy stay-behind force. Depending on the mission, they may have the requirement to emplace obstacles to slow follow on echelons of the enemy attack. As with the artillery, engineer vehicles accompanying the maneuver force will slow the attack, reduce its mobility, and degrade survivability. There is a trade-off between the engineer requirements of the force and mobility.

Considerations of mobility, countermobility, and survivability should rarely prevent the execution of a heavy stay-behind operation, however, planning must be conducted to ensure adequate engineer support.

Air Defense

Air defense is extremely important for the deep maneuver stay-behind force. The need for protection from enemy air attack is likely to be even more important for operations in the enemy rear than in the close fight. In the deep attack, only the longer range, medium and high altitude air defense weapons will be able to provide air protection from friendly lines. With fewer air defenses to attack him, the enemy will have an easier time achieving local air superiority in his own rear than in the MBA. Therefore, the stay-behind force must take adequate air defense protection with the attack.

History supports the idea that adequate air defense is of utmost importance for operations behind enemy lines. During the Battle of the

Bulge, when KG Peiper ran into limited and uncoordinated ground resistance in the American rear, air attack became its greatest threat.⁵³ Near the village of Bullingen, KG Peiper lost thirty tanks and other combat vehicles to air attack, and later lost ten tanks near Stavelot.⁵⁴ Having similar experiences from North Africa, Major General Alfred Toppe concluded after the war, "... in the face of enemy air superiority, the employment of massed armored units is doomed to failure."⁵⁵

The conclusion is that maneuver forces, particularly when operating behind enemy lines, must ensure air defense protection of lead and flank units, supporting artillery, and critical points along the route of march such as defiles and bridges. While the deep maneuver, stay-behind operation can be done with respect to air defense, it will require planning and task organizing the force accordingly.

Sustainment

Sustainment is the BOS that seriously challenges the viability of the heavy stay-behind force. Supporting any military organization in combat, and the armored formation in particular, is challenging. However, to resupply behind enemy lines pushes the capabilities of the best logisticians. Stay-behind missions, even more than other operations, require that planners ensure the attack begins with vehicles topped off, ammunition racks full, and personnel replacements delivered. Specific logistics areas to be examined in this section of the monograph include: key classes of supply, methods of sustainment, maintenance, casualties, and prisoners.

Fuel resupply is the biggest single factor limiting the success of the heavy stay-behind force in a maneuver role. A brigade size force

requires approximately 137,000 gallons of fuel per day.⁵⁶ The fuel hauling capacity of that armor brigade's organic fuel carrying Heavy Expanded Mobility Tactical Trucks (HEMTTs) is 90,000 gallons. The capacity of the forward support battalion (FSB) that supports the brigade is 53,600 gallons, for a combined capacity of only 143,600 gallons.⁵⁷ This amount is just over that required for one day of operation.⁵⁸ Topping off vehicles just prior to the attack will mean they have less than a day supply uploaded in the fuel tanks. Therefore, unless the CSS package is plussed up, the stay-behind force will have, at best, a two day supply of fuel on hand when it begins operations. Furthermore, this is a best case analysis, not considering the fuel requirements of the CSS vehicles themselves.

Planners should try to compensate for the units fuel requirements to the greatest extent possible. They should consider ways to reduce consumption, increase the fuel carrying capacity of the force, and tailor the unit to use just one type of fuel.⁵⁹ Additionally, they should plan to take special equipment and trained personnel to draw fuel from damaged vehicles, petroleum terminals, or captured storage sites and stocks.⁶⁰

History indicates that these measures will be inadequate. The fate of the 320th German Infantry Division in winter of 1942 on the Russian front is a case in point. Operating in the enemy rear, the unit ran out of fuel, abandoned its vehicles, and then captured horses, cows and oxen to use as draft animals to evacuate soldiers and equipment. The unit managed to return to friendly lines with these assets.⁶¹ While a good example of the sustainment imperative of improvisation to survive, the unit was combat ineffective and did not accomplish its mission in the

enemy rear.

Ammunition resupply will be another difficult aspect of sustaining the stay-behind force. In the attack, the heavy brigade requires approximately 450 short tons of ammunition on the first day, 425 tons on days two through four, and 300 tons for each day thereafter.⁶² For operations in the enemy rear, these figures may be reduced somewhat since the intensity of combat is not likely to be as high. Still, the requirement far exceeds the hauling capacity of the heavy brigade including the normal package from a forward support battalion.⁶³ The brigade normally relies on corps throughput for ammunition resupply, and would require truck augmentation to carry more than a half day supply with the force.

The lesson of Patton's Lorraine campaign is instructive with respect to the resupply of ammunition. When the Patton's Third Army ran out of gas, all available trucks were diverted to deliver fuel. As a result, even though the Army used less ammunition in the pursuit than in other operations, it experienced resupply problems in that area too.⁶⁴ The conclusion is that ammunition resupply will be extremely difficult. After the problem of fuel resupply, it is one of the major challenges to the viability of extended stay-behind operations behind enemy lines.

If the stay-behind force does not have the hauling capacity to sustain itself for more than two days, planners must find a method to resupply the force in the enemy rear. Once the operation begins, there are four ways the deep maneuver stay-behind unit may plan to sustain itself. It can take additional combat service support (CSS) requirements with the attack, resupply by ground lines of communications (LOCs),

resupply with air LOCs, or resupply the force through the use of captured stocks. There are problems with each method.

The first way to sustain the heavy force is to take CSS with the unit. Taking all required logistics with the force is the easiest way to keep it supplied. While circumstances may require it, there are risks and limitations involved.

Logistics units will limit the freedom of maneuver of the deep maneuver force, slowing it down. In their article "How to Support Deep Operations," David Reiss and Gary Lee sum up the problems. They state:

Planners should remember that combat service support units have thin-skinned vehicles, cumbersome machinery, limited weaponry and communications, and bulky stocks. Consequently, logistics usually cannot travel as rapidly as the maneuver forces and cannot provide support while on the move.⁶⁵

There are two implications. First, if the security of the force depends on its mobility, and CSS units reduce that mobility, then security is compromised when CSS units accompany the force. Secondly, taking the sustainment package in the attack risks the loss of extremely limited, and often irreplaceable, CSS vehicles and other assets.

Moving additional logistics assets with the force also means that the flow of supplies from the support base is reduced. If CSS vehicles go with the attack, they will not be available for the four resupply trips required each day to sustain the supported unit.⁶⁶ Additionally, the transportation units themselves require sustainment, making the support requirements even larger.

The Red Ball Express, which resupplied the Allied advance across France and into Germany during WWII, illustrates the problem. During

late 1944, the Red Ball Express used over 300,000 gallons of fuel per day, almost as much as the field Army it was resupplying. Even so, the supplies it was able to deliver fell short of the requirement.⁶⁷ CSS units lack of mobility, the danger of losing limited CSS vehicles, and reduced flow of supplies from the rear are all reasons that taking a CSS package with the unit is likely to be an unreliable method to sustain the attack.

An alternative to taking CSS with the deep maneuver force is to maintain an open ground LOC. This form of resupply is the most complete, but is vulnerable to enemy attack.⁶⁸ The vulnerability of open LOCs was demonstrated during the 1973 Arab-Israeli conflict when the Egyptians fired on Israeli supply columns crossing the Suez Canal to resupply Israeli tank columns operating in the Egyptian rear.⁶⁹ Combat, combat support, and additional combat service support forces are required to keep the LOC open. Furthermore, as when taking CSS with the force, running limited and specialized vehicles deep into the enemy rear risks loss of the vehicles at a time they may be one of the critical assets available in theater.

Air resupply of a heavy force is impractical. While it does allow for rapid support with little regard for the nature of the terrain, air resupply is dependent on good weather and requires secure air corridors. However, what makes air resupply impractical is the high number of flights required to sustain a heavy force.⁷⁰ The 137,000 gallon per day estimated fuel requirement of a heavy brigade would require twenty-three C-130 flights (without even considering the mechanics of transferring the fuel from the two 3000 gallon bladders per aircraft to the vehicles themselves).⁷¹ There are other problems with air resupply as well.

Air dropping supplies using the containerized delivery system (CDS) is often wasteful. Losses will usually result from breakage. Additional losses may result from drifting, or accidental delivery on the wrong drop zone. The enemy may also try to mislead approaching aircraft as to the proper drop site. Therefore, the drop zone must be specific and clearly marked.⁷² The result is that air resupply is often an uncertain method to get supplies to a unit.

History supports the conclusion that air resupply will not sustain the heavy force. During WWII, the Germans made extensive use of air resupply for stay-behind units. However, they continually came up short of the requirements, as demonstrated at the Cherkassy pocket in Russia.⁷³ The observation of an unidentified German commander during interviews after the war sums up the reliability of air resupply to the heavy force:

Supply by air cannot satisfy all the requirements of an encircled force; it can only remedy some of the most important deficiencies. This fact was demonstrated during operations described in the preceding chapters and confirmed by the personal experience of the author. It is not likely to change even if absolute superiority in the air is assured and an adequate number of planes can be assigned to the operation.⁷⁴

Another method of sustainment is through the use of captured enemy supplies. While there are examples of units resupplying through the use of captured stocks, it cannot be planned on. The 9th Australian Division, a light stay-behind force used by the Allies at Tobruk, Libya in 1941, used captured machine guns, artillery, tanks and motor vehicles.⁷⁵ Additionally, KG Peiper refueled using captured American fuel stocks in 1944.⁷⁶ However, Kampfgruppe Peiper is also

an example of the uncertainty involved in relying on captured enemy supplies for sustainment. As KG Peiper was running low on fuel and driving for another depot, the Americans were able to destroy the site just prior to the German arrival.⁷⁷ Destruction of the fuel led directly to the operational pause that resulted in the unit's defeat. The lesson is that while captured stocks may provide a windfall resupply, they cannot be relied on to sustain the deep maneuver stay-behind force.

If an armored formation is used in a stay-behind role for a deep maneuver mission, it will probably have to be sustained by a combination of the above methods. However, even such a combination may not be sufficient to meet the stay-behind force's logistics requirements. During the Lorraine Campaign from late August to early September 1944, Patton received only one quarter of his daily requirements from the Red Ball Express. He obtained additional supplies from captured German stocks and air resupply. However, these additional quantities still did not allow him to continue operations to the degree he desired.⁷⁸

Another limitation on the deep maneuver stay-behind force is the breakdown of vehicles and equipment. The German experience during WWII was that units and troops had to be stripped of any unnecessary equipment prior to operations in the enemy rear.⁷⁹ However, even with a minimum amount of equipment, damage and equipment breakdown will occur. Therefore, planners must consider how to conduct maintenance operations and evacuation of vehicles during stay-behind operations.

The deep maneuver stay-behind force will do the minimum amount of maintenance possible. In their article, "How to Support Deep

Operations," David Reiss and Gary Lee point out that only mission-essential maintenance will be conducted. Additionally, the minimum amount of the authorized stockage list (ASL) should be taken on the operation, and the use of controlled substitution will be normal.⁸⁰ As a result, major repairs, as well as major recovery and evacuation will not be possible. Unless there is an open LOC to the base of operations, evacuation to the rear will not occur. Stopping to repair badly damaged vehicles will also compromise the security of the force by allowing the enemy to mass forces and firepower to destroy it.

Planners must be prepared for the possibility that more vehicles will be damaged than the units recovery capability can handle. To deal with this situation, Reiss and Lee recommend that forces take additional tow bars.⁸¹ If the requirement exceeds the hauling capacity of the unit under these circumstances, there must be a priority for vehicle repair. If repair cannot be accomplished in a specified time, provisions must be made to destroy and abandon the equipment. Because of these limitations with respect to maintenance, stay-behind operations may be expensive in terms of equipment. However, they do not make the mission impossible. It can be accomplished so long as the force anticipates, is willing to accept, and tailors itself to compensate for the potential losses.

Next to the resupply of fuel, perhaps the biggest challenge to the viability of the heavy stay-behind force is casualty evacuation. The American soldier will not leave his dead and wounded comrades behind on the battlefield. However, in addition to the strong moral obligation to evacuate dead and wounded, the treatment of casualties has a profound effect on the morale of the fighting soldier.

On several occasions, German maneuver forces operating in the enemy rear left casualties behind with adverse results on the rest of the unit. The Germans left casualties behind at Brody Pocket in Southern Poland during July 1944, and during the Battle of the Bulge when KG Peiper left 80 German casualties for the Americans to provide medical care.⁸² One German officer wrote:

Any measure from which they [troops] might derive the slightest indication that wounded personnel is [sic] to be left behind will immediately reduce their fighting spirit, especially if they are facing an enemy like the Russians.⁸³

In case studies of American encircled forces, LTC Campbell found that the American experience confirmed that the treatment of casualties has a big effect on morale. He wrote, "if moving, a unit must take the wounded along or suffer the consequences of lower troop morale and possible rebellion."⁸⁴ Evacuation of the dead and wounded is the problem.

Without an open ground LOC, the only alternative to taking the dead and wounded with the force, is air evacuation. The deeper behind enemy lines the force is operating, the more difficult and dangerous evacuation will become. Air evacuation requires secure air corridors through enemy controlled territory. Long-range communications are required to call for aircraft, and it has already been proved that special planning and coordination is needed to make that happen. Additionally, the deeper the aircraft must fly, the longer it will take to get a patient to the proper medical treatment, reducing the number of lives that can be saved. Additionally, aircraft may be in short supply. If large numbers of casualties are sustained, they could quickly overwhelm the lift

capabilities dedicated to the job.

Medical treatment for ambulatory patients is another problem. The unit will be constantly on the move and soldiers are likely to suffer as severely wounded patients are treated in the back of moving vehicles. Doctors will be unable to perform surgery, and patients will not rest as easily as in a stationary hospital bed. The stay-behind force will not have the facilities for their proper care.

Prisoners of war may also constrain the mobile stay-behind force. The option of not taking prisoners, of shooting captured enemy soldiers as done by KG Peiper, is morally reprehensible, and beyond consideration for the American soldier.⁸⁵ As a result, the commander may want to take extra infantry or military police (MPs) on the operation.⁸⁶ If prisoners are taken, they will reduce the mobility of the force. In some cases, the commander may have to consider disarming and releasing prisoners. Taken together, the problems of dealing with casualties, remains, and prisoners of war are another reason to ask the question, is using a stay-behind forces in a deep maneuver role worth the effort?

Sustainment will be the major limiting factor in using stay-behind forces in a deep maneuver role. The force conducting deep operations should be self-sustaining. This fact will limit operations to about two days in length. The force must be willing to accept the loss through destruction and abandonment of some of the equipment taken on the operation, including valuable CSS vehicles and assets. Additionally, the treatment of casualties will suffer. In the final analysis, the logistics requirements of the modern maneuver force make it extremely difficult to sustain in the enemy rear. While deep

operations may not be an impossible task, it is likely to be an extremely difficult one. As a result, planners must answer the question; do the ends justify the means?

Section IV

Analysis

The German experience in WWII demonstrated that under the conditions of modern mobile warfare, bypassed situations are more easily created than in the past.⁸⁷ Section one explained why the trend toward increased dispersion on today's nonlinear battlefield should provide increased opportunities for bypassed forces to find themselves in the enemy rear.

The fact that a force has been bypassed does not mean it is useless. FM 100-15 states: "a unit temporarily encircled may continue the attack. The encircling force may not be capable of containing the force..... Such an operation is conducted similarly to a breakout toward friendly lines."⁸⁸ It should be noted that these situations would provide short notice opportunities as tactical events transpire. Only the unplanned stay-behind operation could take advantage of the quickly changing situation. Therefore, the modern battlefield facilitates the unplanned type of stay-behind operation.

Section three showed that the stay-behind commanders battlefield operating system requirements require thorough planning and coordination. Special provisions will have to be made to ensure mobility of the force since its security is largely dependent on its ability

to stay on the move. A deception plan must be developed and implemented to move the force into hide positions. Long-range communications equipment, in addition to the units TO&E, must be utilized, and a special fire support package tailored. Finally, in order for the unit to operate in the enemy rear for more than two days, extensive plans will have to be made to sustain the force. The time required to plan and coordinate the deep maneuver stay-behind operation rules out the use of unplanned operations in the deep battle.

Therefore, while the future battlefield may facilitate the use of stay-behind forces, it will not facilitate the type operation most likely to succeed in the deep battle. While executing stay-behind operations on the Russian front, the Germans learned, "speed is an absolute requirement, but it should not be gained at the cost of hasty and inadequate preparation."⁸⁹ Despite appearances, nonlinearity does not facilitate deep maneuver stay-behind operations, and it would be dangerous to try to conduct an operation when the conditions do not favor success. Units in a fluid battlefield situation that find themselves behind an enemy advance and capable of striking deep into the enemy rear, are not likely to meet the commander's BOS requirements for extended operations. Furthermore, the time required to coordinate planned stay-behind operations will not be available in a rapidly changing tactical situation.

Not only do battlefield conditions hinder the use of deep maneuver stay-behind operations, but if they are employed, the ends they achieve may not justify the effort to plan and execute them. With today's technology, we have the ability to do much the same mission through the use of deep fires, such as TACAIR, attack helicopters or

surface to surface missiles.

Modern technology has given the U.S. military the ability to find, acquire, target, and attack enemy forces before they arrive at the MBA. The idea of the deep battle as we know it became possible with the development of intelligence collectors capable of finding enemy targets deep.⁹⁰ With the lethality and ever increasing range of modern deep fire weapons systems, the American military is able to delay, disrupt, and destroy enemy formations before they impact on the close fight. TRADOC Pam 525-5 states, "we have progressed to the point where we now have the ability to see significant enemy forces in all weather and at great depth and to decide which forces to attack with a variety of precision weapon systems of escalating lethality."⁹¹ Weapons systems such as MLRS and the Army Tactical Missile System (ATACMS) may make the deep maneuver force a thing of the past.

The ability to decide what deep targets to attack and destroy allows the effects obtained by deep fires to approximate those obtained through deep maneuver. General Hans Henning von Sandrart addresses the point in his article, "Considerations of the Battle in Depth." He equates deep fires with maneuver when he states, "the battle in depth, or perhaps better, the engagement of enemy forces by fire in depth...."⁹² Furthermore, the gap between the effects of fires and maneuver is closing so quickly that some traditional forms of fire support such as attack helicopters and tactical air support are now being considered maneuver forces. Army aviators already consider themselves a maneuver force, and the U.S. Air Force is beginning to think of itself as providing battlefield maneuver as well.

Lt Col. Harold Gonzales, in a research report for the USAF Air

University, argues that to fully integrate air power into ground operations, TACAIR must be employed to take advantage of an ability to provide maneuver as well as firepower.⁹³ Lt Col. Gonzales calls TACAIR "flying cavalry" He points out that a traditional role for cavalry was for large formations to avoid the enemy's main forces and penetrate deep into the rear. There they would disrupt enemy communications and supply points. He believes that, through the use of mission orders, TACAIR can provide the same capability to penetrate the enemy front lines to attack vulnerable targets in the rear.⁹⁴ The recent Gulf War seems to bear his ideas out, and suggest they also apply to Army aviation.

In a School of Advanced Military Studies Monograph, Major David Mock raises another interesting question about utilizing maneuver forces deep. He points out that a small United States Army fighting outnumbered may not have enough forces to risk committing some in the enemy rear.⁹⁵ With the size of our Army getting even smaller, and regional threats such as Iran continuing to build combat strength, this concern is not likely to become irrelevant, and may even be exacerbated. Between a potential lack of available forces and the ability to stand-off and kill enemy targets in depth without endangering large numbers of soldiers behind enemy lines, justifying the option of deep maneuver, including the use of stay-behind forces, becomes more difficult.

The conclusion is that stay-behind forces in a deep maneuver role do not justify the operational effort. The problems of sustaining the deep maneuver force make its viability highly suspect. Furthermore, extensive preparations, above and beyond those normally

required for maneuver operations in the close battle, must be made to launch a maneuver unit deep behind enemy lines. These considerations, combined with the fact that the same mission can be accomplished with deep fires without endangering the lives and equipment of a maneuver force, mean that deep maneuver is usually not required. However, this analysis is solely with respect to the deep battle and does not rule out the viability of utilizing unplanned heavy stay-behind forces as part of the close fight.

If the option of using a heavy stay-behind force in a deep maneuver role behind enemy lines is not worth the effort and risk, there is one mission that does appear feasible. The stay-behind mission might be viable for shallow operations close to the FEBA, lasting no more than two days.

Operations in the near enemy rear would not be limited by many of the constraints on deep maneuver. Most importantly, sustainment should not be a hinderance for operations up to about two days in length. Fire support can be provided by friendly forces in the immediate area, particularly with some of the new long-range artillery systems in the inventory such as MLRS and ATACMS. Communications problems are minimal, and surprise can be achieved by taking advantage of the developing tactical situation, or through planned deception. There are historical examples of such operations.

The Germans used a mobile defense on the Russian front, allowing bypassed strongpoints to either counterattack in the direction of friendly lines or receive local counterattacks as part of a defense in depth. German stay-behind pockets in Russia often resulted from orders to retain ground in the face of certain encirclement. They were usually

followed by an attempt to breakout in the direction of friendly lines.⁹⁶ The effect is to attrit enemy forces, slow and disrupt the offensive, and stabilize the front lines.

The Germans also employed heavy stay-behind forces in the close battle in 1944 France. During Operation Goodwood, three British tank divisions attacked to tie down German armor, facilitating the American breakout from Normandy. The Germans employed a mobile defense with armored groups. One force, Kampfgruppe (KG) Luck, was allowed to be bypassed by fifty tanks. As the British columns moved by, they received flanking fire from German tanks and anti-tank guns in stay-behind strongpoints.⁹⁷ The bypassed tanks of KG Luck then moved out of their positions and counterattacked into the exposed British flanks, delaying the British attack.⁹⁸

The Israeli's also used operations in the rear of the enemy, close in to the FEBA, as a part of the close battle. While not a stay-behind operation, the Battle of Abu Ageila in the 1967 Six Day War is an example. The Israeli's established positions in the enemy rear to block the movement of reserves, allowing the attack of front line units at acceptable force ratios.⁹⁹ These are only a few of the examples of maneuver forces being used to good effect in the enemy rear as part of the close fight.

The German conclusion that movement perpendicular to the enemy lines of operation gives the best chance for success also supports the idea that shallow, close-in stay-behind operations may have the most utility on the modern battlefield. These movements would, by definition, prevent the stay-behind force from getting so deep in the enemy rear that it could not be supported by fire from other friendly

forces.

The conclusion is that heavy stay-behind operations are a viable option in the close battle. Again, the question of what the unit is to accomplish must be asked, but here the answers are easier to find. Missions include: local counterattack, providing an anvil for another units counterattack, blocking the movement of reserves, or going after enemy CS and CSS assets located in the MBA.

Section V

Summary and Conclusions

Remember that both sides fumble in the dark at all times. One will quickly realize that a party sent past the enemy's wing to raid his rear is like a man in a dark room with a gang of enemies. They will get him in the end. The same fate awaits the raiders.¹⁰⁰

- Carl von Clausewitz

The fundamental conclusion of this study is that offensive stay-behind missions deep in the enemy's rear area of operations are not viable for mechanized or armored forces. Two points support this conclusion. First, the means required to employ a stay-behind force in a deep maneuver role do not justify the ends achieved. Ensuring mobility, sustainment, and fire support require special planning and resources, and will likely detract from the effort given other units along the front. Furthermore, these requirements are often contradictory. For example, ensuring sustainment by moving CSS with the force reduces mobility. Second, the capabilities of modern deep fires allow the commander to achieve the effects of maneuver without

risking forces in the enemy rear.

However, stay-behind operations have utility in the enemy's near rear. The nature of the modern battlefield may facilitate the use of unplanned operations lasting only a short period. The missions are there, and the commander's requirements can be met. In this regard, the stay-behind force in a maneuver role is basically a large scale raid. The stay-behind aspect of the operation is merely the method of emplacing the force in the enemy rear.

This paper has examined just one type of stay-behind force, a heavy unit in a deep maneuver role. Specific conclusions are as follows:

1. Using a heavy, deep maneuver, stay-behind force to tie up enemy troops and prevent their use in another sector is rarely successful. This type force is not viable.
2. The security of the deep maneuver stay-behind force will largely depend on its mobility and ability to remain on the move. As von Manstein said, "Once it comes to a halt, it will be immediately assailed from all sides by the enemy's reserves." When the force must go into a temporary halt, all-around security is a must.
3. The stay-behind force will rely on TACAIR for fire support deep in the enemy rear. Whatever artillery is taken with the force will hinder mobility, decreasing survivability of the force, while drastically complicating its sustainment needs.

4. Mobility, countermobility, and survivability requirements will likely hinder, but not prevent stay-behind operations. Steps must be taken to secure key choke points, or plan routes where they are not a factor. The speed of the force will suffer if AVLBs are taken in the attack. Additionally, special operations to secure choke points would not normally be available.

5. Provisions for the proper command and control of deep maneuver forces will require extensive planning, coordination and resources in addition to those normally used in close operations. Long-range radios not currently authorized by the units TO&E must be issued.

6. Fuel will likely make the heavy stay-behind force, operating in a deep maneuver role, combat ineffective for operations lasting longer than two days.

7. The nonlinear nature of the modern battlefield does not facilitate deep maneuver stay-behind operations. Units in position to execute unplanned operations are not likely to meet the commanders battlefield operating system requirements for deep maneuver. The time required to coordinate planned stay-behind operations will not be available in rapidly changing tactical situations.

8. Stay-behind forces in a deep maneuver role are not worth the effort it takes to plan and execute them. Sustaining the deep maneuver force makes its viability highly suspect, and coordinating the other BOS requirements is complicated. Furthermore, the same mission can

usually be accomplished with deep fires without endangering the lives and equipment of a maneuver unit.

9. Heavy stay-behind operations are a viable option in the close battle. There are many missions that could be accomplished, and the commanders BOS requirements can be met.

In 1962 Otto Heilbrunn asked the question, "should the far rear be exclusively a harassing zone and combat be restricted to the near rear?"¹⁰¹ The answer, from the perspective of the stay-behind force, is a resounding yes.

ENDNOTES

¹Lt Col. Charles M. Westenhoff, comp. Military Air Power: The CADRE Digest of Air Power Opinions and Thoughts, Maxwell Air Force Base: Air University Press, October 1990, 80.

²B. H. Liddell Hart, Strategy (London: Faber and Faber Ltd., 1954), 332.

³Colonel Ward A. Miller The 9th Australian Division Versus the Africa Corps: An Infantry Division Against Tanks - Tobruk, Libya, 1941. Combat Studies Institute Monograph. (Fort Leavenworth: US Army Command and General Staff College, August 1986), 6.

⁴Department of the Army Pamphlet (DA Pam) 20-234, Operations of Encircled Forces: German Experiences in Russia. (Washington, DC: Department of the Army, 14 January 1952), 7.

⁵Field Manual (FM) 7-20, The Infantry Battalion (Washington, DC: Department of the Army, 6 April 1992), 6-20, and Field Manual (FM) 71-100, Division Operations (Washington, DC: Department of the Army, 16 June 1990), 6-9.

⁶Major David C. Mock, A Look at Deep Operations: The Option of Deep Maneuver, School of Advanced Military Studies Monograph (Fort Leavenworth, KS; U.S. Army Command and General Staff College, 1987), 38.

⁷Major James C. Barbara and Major Robert F. Brown, "Deep Thrust on the Extended Battlefield," Military Review, October 1982, 29.

⁸LTC L. D. Holder, "Maneuver in the Deep Battle," Military Review, May 1982, 57.

⁹C. N. Donnelly, "Operations in the Enemy Rear, Part 2," Infantry, May-June 1981, 31. Reprint from International Defense Review, 1/1980.

¹⁰Joint Pub 1-02. Department of Defense Dictionary of Military and Associated Terms (Washington, DC: The Joint Chiefs of Staff, 1 December 1989), 346.

¹¹Otto Heilbrunn, Warfare in the Enemy's Rear (New York: Prager Press, 1962), 29.

¹²Anthony Kemp, The Unknown Battle, Metz 1944 (New York: Stein and Day, 1981), 225.

¹³DA Pam 20-234, 1.

14FM 71-100, 6-8.

15Christopher R. Gabel, The 4th Armored Division in the Encirclement of Nancy (Fort Leavenworth: U.S. Army Command and General Staff College, 1986), 23.

16Holder, 58.

17FM 7-20, 6-21.

18Field Manual (FM) 7-72, Light Infantry Battalion (Washington, DC: Department of the Army, 16 March 1987), 4-51.

19Field Manual (FM) 71-3, Armored and Mechanized Infantry Brigade (Washington, DC: Department of the Army, 11 May 1988), 5-8.

20DA Pam 20-234, 55.

21FM 7-20, 6-20.

22DA Pam 20-234, 51.

23Holder, 60

24FM 7-20, 6-20.

25FM 7-20, 6-20.

26DA Pam 20-234, 59.

27DA Pam 20-234, 51.

28Richard E. Simpkin, Tank Warfare: An Analysis of Soviet and NATO Tank Philosophy (London: Brassey's Defense Publishers Limited, 1979), 169.

29Erich von Manstein, Lost Victories (Novato, California: Presidio Press, 1982), 185.

30Kampfgruppe Peiper was a tank heavy force, about the size of a modern U.S. Army brigade, that spearheaded the German offensive through the Ardennes forest. While it was not a stay-behind force, it was a deep maneuver force, operating in the American rear. The lessons of KG Peiper apply to the deep maneuver stay-behind force with respect to those things common to all deep maneuver operations, and is referred to frequently in the monograph.

31Charles B. MacDonald, The Battle of the Bulge (London: Weidenfeld and Nicholson, 1984), 236-238.

32Joachim Peiper, "Kampfgruppe Peiper: 15-26 December 1944." Translated by Werner Meyer. Historical Manuscript (MS C-004). Historical Division, European Command, no date, 15.

33DA Pam 20-201, 22.

34Holder, 59.

35Field Manual (FM) 100-15, Corps Operations (Washington, D.C.: Department of the Army, 13 September 1989), 7-8.

36FM 100-15, 7-8.

37MacDonald, 204.

38DA Pam 20-234, 57.

39LTC David R. Campbell, Fighting Encircled: A Study in U.S. Army Leadership DRAFT (Washington, DC: U.S. Army Center of Military History, 1987), 102.

40TC 6-71, 35.

41Mary Sue Winneke, ed., "Winning In the Desert II," CALL Newsletter. No. 90-8. (Fort Leavenworth, KS: Center for Lessons Learned (CALL), U.S. Army Combined Arms Command, January 1992), 8.

42DA Pam 20-234, 71.

43Ms. Beverly A. Popelka, Weapon Systems: United States Army 1992 (Washington, D.C.: U.S. Government Printing Office, 1 March 1992), 169.

44Mary Sue Winneke, ed., "Joint Tactical Communications: Operations Desert Shield - Desert Storm," CALL Newsletter. No. 92-1. (Fort Leavenworth, KS: Center for Army Lessons Learned (CALL), U.S. Army Combined Arms Command, January 1992), 6.

45Campbell, 106.

46DA Pam 20-234, 53.

47DA Pam 20-234, 53.

48Campbell, 98.

49FM 71-100, 6-8.

50MacDonald, 240.

51MacDonald, 224.

52MacDonald, 225.

53Peiper, 8.

54MacDonald, 208 and 242.

55Major General Alfred Toppe, Desert Warfare: German Experiences in World War II Combat Studies Institute Special Study, (Fort Leavenworth: US Army Command and General Staff College, August 1991), 55.

56Student Text (ST) 101-6, G1/G4 Battle Book (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1 June 1992), 2-3.

57ST 101-6, 2-3, N-1.

58Calculations based on ten 5,000 gallon tankers and two 1099 gallon Tank and Pump Units (TPUs) in the FSB supply company, and 36 HEMTTs in the Armor Battalion support platoon.

59David M. Reiss and Gary R. Lee, "How to Support Deep Operations," Army Logistician, December 1986, 24.

60Reiss and Lee, 24.

61Department of the Army Pamphlet (DA Pam) 20-201, Military Improvisations During the Russian Campaign. (Washington, DC: Department of the Army, 29 August 1951), 26.

62ST 101-6, 2-4.

63An armor battalion has ten organic M977 HEMTT light cargo vehicles with a load capacity of ten tons each. Additionally, the supply company of the forward support battalion has two 22.5 ton breakbulk semitrailers, five 11 ton HEMATs, and 18 5 ton trucks, for a total haul capacity of 290 short tons.

64Christopher R. Gabel, The Lorraine Campaign: An Overview, September-December 1944, Combat Studies Institute Monograph, (Fort Leavenworth: U.S. Army Command and General Staff College, February 1985), 7.

65Reiss and Lee, 25.

66ST 101-6, 2-11.

67Gabel, Lorraine, 5.

68Reiss and Lee, 22.

69Frank Aker, October 1973: The Arab-Israeli War, (Hamden, Connecticut: Archon Books, 1985), 121.

70Reiss and Lee, 23.

71The figure of 137,000 gallons/day in the offense is a conservative estimate. It is the average of the 136,000 gallons used by a Mechanized Infantry Brigade and 138,000 gallons/day used by an Armored Cavalry Regiment. Both these units use less than an Armored Brigade, the likely force to be used in a deep maneuver stay-behind role (but not listed in the source). Figures taken from ST101-6, 2-3. the figures on the C-130 also come from ST101-6, 2-4.

72DA Pam 20-234, 69.

73DA Pam 20-234, 45 and 50.

74DA Pam 20-234, 61.

75Miller, 49.

76MacDonald, 208.

77MacDonald, 238.

78Gabel, Lorraine, 6.

79DA Pam 20-234, 56.

80Reiss and Lee, 25.

81Reiss and Lee, 25.

82Peiper, 13 and Department of the Army Manuscript (P-143c), Division Operations During the German Campaign in Russia, Historical Division, U.S. Army Europe, (Washington, D.C.: Government Printing Office, 1946), 230.

83DA Pam 20-234, 62.

84Campbell, 99.

85KG Peiper shot prisoners vicinity Honsfeld, Ligneuvill, and at Malmedy, the most famous incident. The problem of dealing with prisoners taken behind enemy lines was highlighted by Peiper's recalling after the war, "it was expressly stated that POWs must be shot where local conditions of combat should require it. McDonald, 203, 229, 219, 197.

86Reiss and Lee, 25.

87DA Pam 20-234, 1.

88FM 100-15, 7-9.

89DA Pam 20-234, 14.

90LTC William A. Walker, "The Deep Battle," Army, July 1986, 30.

91United States Army Training and Doctrine Command Pamphlet (TRADOC Pam) 525-5, A Concept for the Evolution of Airland Battle for the Strategic Army of the 1990s and Beyond (Fort Monroe, Virginia: U.S. Army Training and Doctrine Command, 1991), 9.

92General Hans Henning von Sandrart, "Considerations of the Battle in Depth," Military Review, October 1987, 9.

93Lt Col. Harold T. Gonzales, Tactical Air Support of Ground Forces in the Future, (Maxwell Air Force Base: Air University Press, 1990), 5.

94Gonzales, 5.

95Major David C. Mock, A Look at Deep Operations: The Option of Deep Maneuver School of Advanced Military Studies Monograph (Fort Leavenworth, KS; U.S. Army Command and General Staff College, 1987), 30-31.

96DA Pam 20-234, 1.

97Henry Maule, Caen: The Brutal Battle and Breakout From Normandy (Devon: David and Charles Publishers, 1976), 85.

98Alexander McKee, Caen: Anvil of Victory (New York: St. Martin's Press, 1964), 268.

99Dr. George W. Gawrych, Key to the Sinai: The Battles for Abu Ageila in the 1956 and 1967 Arab-Israeli Wars, Combat Studies Institute Research Survey No. 7 (Fort Leavenworth: U.S. Army Command and General Staff College, 1990), 93.

100Clausewitz, 462.

101Heilbrunn, 29.

Bibliography

Books

- Aker, Frank. October 1973: The Arab-Israeli War. Hamden, Connecticut: Archon Books, 1985.
- Bloch, Jean de. The Future of War. Combat Studies Institute Reprint. Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1914.
- Clausewitz, Carl von. On War. Edited and translated by Michael Howard and Peter Paret. Princeton: Princeton University Press, 1984.
- Heilbrunn, Otto. Warfare in the Enemy's Rear. New York: Prager Press, 1962.
- Herzog, Chaim. The Arab-Israeli Wars. New York: Vintage Books, 1984.
- Kemp, Anthony. The Unknown Battle, Metz 1944. New York: Stein and Day, 1981.
- Liddell Hart, B. H. Strategy. London: Faber and Faber Ltd., 1954.
- Liddell Hart, B. H., ed. The Rommel Papers. New York: Harcourt, Brace and Company, 1953.
- MacDonald, Charles B. The Battle of the Bulge. London: Weidenfeld and Nicholson, 1984.
- Manstein, Erich von. Lost Victories. Novato, California: Presidio Press, 1982.
- Maule, Henry. Caen: The Brutal Battle and Breakout From Normandy. Devon: David and Charles Publishers, 1976.
- McKee, Alexander. Caen: Anvil of Victory. New York: St. Martin's Press, 1964.
- Popelka, Ms. Beverly A. Weapon Systems: United States Army 1992. Washington, D.C.: U.S. Government Printing Office, 1 March 1992.
- Simpkin, Richard E. Tank Warfare: An Analysis of Soviet and NATO Tank Philosophy. London: Brassey's Defense Publishers Limited, 1979.
- Westenhoff, Lt Col. Charles M., comp. Military Air Power: The CADRE Digest of Air Power Opinions and Thoughts. Maxwell Air Force Base: Air University Press, October 1990.

Periodicals and Articles

- Barbara, Major James C. and Major Robert F. Brown. "Deep Thrust on the Extended Battlefield." Military Review, October 1982, 21-32.
- Donnelly, C. N. "Operations in the Enemy Rear, Part 1." Infantry, March-April 1981, 24-28. Reprint from International Defense Review, 1/1980.
- Donnelly, C. N. "Operations in the Enemy Rear, Part 2." Infantry, May-June 1981, 28-35. Reprint from International Defense Review, 1/1980.
- Holder, LTC L. D. "Maneuver in the Deep Battle." Military Review, May 1982, 54 through 61.
- Reiss, David M. and Gary R. Lee. "How to Support Deep Operations." Army Logistician, December 1986, 22-26.
- Sandrart, General Hans Henning von. "Considerations of the Battle in Depth." Military Review, October 1987, 8-11.
- Walker, LTC William A. "The Deep Battle." Army, July 1986, 26-37.

Government Documents

- Bogdan, Major Rick, ed. "Joint Tactical Communications: Operation Desert Shield - Desert Storm." CALL Newsletter. No. 92-1. Fort Leavenworth, KS: Center for Army Lessons Learned (CALL), U.S. Army Combined Arms Command, January 1992.
- Bogdan, Major Rick, ed. "The Ultimate High Ground: Space Support to the Army: Lessons from Operations Desert Shield and Storm." CALL Newsletter. No. 91-3. Fort Leavenworth, KS: Center for Army Lessons Learned (CALL), U.S. Army Combined Arms Command, October 1991.
- Combined Arms Training Activity. CTC Lessons Learned: CMTc, NTC, JRTC. Fort Leavenworth, KS: U.S. Army Combined Arms Training Activity, 1 July 1987.
- Department of the Army Manuscript (P-143c). Division Operations During the German Campaign in Russia. Historical Division, U.S. Army Europe. Washington, DC: Government Printing Office, 1946.
- Department of the Army Pamphlet (DA Pam) 20-201. Military Improvisations During the Russian Campaign. Washington, DC: Department of the Army, 29 August 1951.

Department of the Army Pamphlet (DA Pam) 20-233. German Defense Tactics Against Russian Break-Throughs. Washington, DC: Department of the Army, 4 October 1951.

Department of the Army Pamphlet (DA Pam) 20-234. Operations of Encircled Forces: German Experiences in Russia. Washington, DC: Department of the Army, 14 January 1952.

Department of the Army Pamphlet (DA Pam) 20-240. Rear Area Security: The Soviet Second Front Behind the German Lines. Washington, DC: Department of the Army, 31 July 1951.

Field Manual (FM) 7-20. The Infantry Battalion. Washington, DC: Department of the Army, 6 April 1992.

Field Manual (FM) 7-72. Light Infantry Battalion. Washington, DC: Department of the Army, 16 March 1987.

Field Manual (FM) 71-3. Armored and Mechanized Infantry Brigade. Washington, DC: Department of the Army, 11 May 1988.

Field Manual (FM) 71-100. Division Operations. Washington, DC: Department of the Army, 16 June 1990.

Field Manual (FM) 100-5. Operations. Washington, DC: Department of the Army, 5 May 1986.

Field Manual (FM) 100-15. Corps Operations. Washington, D.C.: Department of the Army, 13 September 1989.

Field Manual (FM) 101-5-1. Operational Terms and Symbols. Washington, D.C.: Department of the Army, 21 October 1985.

Field Manual (FM) 101-10-1/2. Staff Officers' Field Manual Organizational, Technical, and Logistical Data Planning Factors (Volume 2). Washington, D.C.: Department of the Army, 7 October 1987.

Joint Pub 1-02. Department of Defense Dictionary of Military and Associated Terms. Washington, DC: The Joint Chiefs of Staff, 1 December 1989.

Peiper, Joachim. "Kampfgruppe Peiper: 15-26 December 1944." Translated by Werner Meyer. Historical Manuscript (MS C-004). Historical Division, European Command, no date.

Steiner, Felix. "Tactics of Mobile Unit Operations of the 5th Panzergrenadier Division 'Wiking' at Rostow and Maikop Oilfields (Summer 1942)." Historical Manuscript (MS D-248). Office of the Chief of Military History, 1947.

Student Text (ST) 101-6. G1/G4 Battle Book. Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1 June 1992.

Technical Manual (TM) 9-2350-266-10. Operators Manual for Carrier Personnel. Full Tracked, Fire Support: M981. Washington, D.C.: Department of the Army, 1985.

Technical Manual (TM) 9-2350-311-10. Operators Manual for Howitzer, Medium, Self-Propelled: 155mm M109A2 and 155mm M109A3. Washington, D.C.: Department of the Army, June 1986.

United States Army Training and Doctrine Command Pamphlet (TRADOC Pam) 525-5. A Concept for the Evolution of Airland Battle for the Strategic Army of 1990s and Beyond. Fort Monroe, Virginia: U.S. Army Training and Doctrine Command, 1991.

Winneke, Mary Sue, ed. "Joint Tactical Communications: Operations Desert Shield - Desert Storm." CALL Newsletter. No. 92-1. Fort Leavenworth, KS: Center for Army Lessons Learned (CALL), U.S. Army Combined Arms Command, January 1992.

Winneke, Mary Sue, ed. "Winning In the Desert II." CALL Newsletter. No. 90-8. Fort Leavenworth, KS: Center for Lessons Learned (CALL), U.S. Army Combined Arms Command, January 1992.

Unpublished Materials

Campbell, LTC David R. Fighting Encircled: A Study in U.S. Army Leadership. DRAFT Washington, DC: U.S. Army Center of Military History, 1987.

Gabel, Christopher R. The Lorraine Campaign: An Overview, September-December 1944. Combat Studies Institute Monograph. Fort Leavenworth: U.S. Army Command and General Staff College, February 1985.

Gabel, Christopher R. The 4th Armored Division in the Encirclement of Nancy. Fort Leavenworth: U.S. Army Command and General Staff College, 1986.

Gawrych, Dr. George W. Key to the Sinai: The Battles for Abu Ageila in the 1956 and 1967 Arab-Israeli Wars. Combat Studies Institute Research Survey No. 7. Fort Leavenworth: U.S. Army Command and General Staff College, 1990.

Goehring, Major Russell J. The Airland Battle Trojan Horse: The Use of Bypassed Forces to Increase Tactical Depth In the Defense. School of Advanced Military Studies Monograph. Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1986.

Gonzales, Lt Col. Harold T. Tactical Air Support of Ground Forces in the Future. Maxwell Air Force Base: Air University Press, 1990.

- Miller, Colonel Ward A. The 9th Australian Division Versus the Africa Corps: An Infantry Division Against Tanks - Tobruk, Libya, 1941. Combat Studies Institute Monograph. Fort Leavenworth: US Army Command and General Staff College, August 1986.
- Mock, Major David C. A Look at Deep Operations: The Option of Deep Maneuver. School of Advanced Military Studies Monograph. Fort Leavenworth, KS; U.S. Army Command and General Staff College, 1987.
- Mornston, Major Harry E. Raids at the Operational Level - To What End? School of Advanced Military Studies Monograph. Fort Leavenworth, KS; U.S. Army Command and General Staff College, 1992.
- Richmond, Major Melvin E. Corps Stay-Behind Force: A Role for the Light Infantry Division On the Central European Battlefield. School of Advanced Military Studies Monograph. Fort Leavenworth, KS; U.S. Army Command and General Staff College, 1987.
- Toppe, Major General Alfred. Desert Warfare: German Experiences in World War II. Combat Studies Institute Special Study. Fort Leavenworth: US Army Command and General Staff College, August 1991.
- Wray, Major Timothy A. Standing Fast: German Defensive Doctrine on the Western Front During World War II. Combat Studies Institute Research Study No. 5. Fort Leavenworth, DS: U.S. Army Command and General Staff College, 1986.

Other Sources

- Mattox, LTC Philip M. Former Main Support Battalion (MSB) commander. Interview with the author, 8 September 1992.